XXXVI.—*Description of a new Species of* Ptycholepis *from the Lias of Lyme Regis.* By James W. Davis, F.G.S. &c.

[Plate X.]

Genus Ptycholepis, Agassiz.

Scales thick, elongated, plicated transversely on the base, and deeply furrowed longitudinally; under surface smooth and devoid of rib; pectoral fins pointed; dorsal fin opposite the ventral fin; anal fins remote. (*Egerton.*)

Ptycholepis gracilis, sp. nov.

A well-preserved specimen of *Ptycholepis* recently came into my possession, which differs in several respects from the species of this genus which have been described by Prof. Agassiz and Sir Philip Egerton. Its form is more attenuated than that of either of the previously figured species.

The first representative of the genus, *Ptycholepis bollensis**, Agassiz, from the Lias at Whitby, was a tolerably large specimen about 10·5 inches in length, of which length the head occupies more than one fourth. Sir Philip Egerton described two species, *P. minor* † and *P. curtus* ‡; the former, from the Lias of Barrow-on-Soar, is a small and elegant fish, now in the Enniskillen-Egerton collection at the Natural-History Museum, South Kensington. *Ptyocholepis curtus* is a much shorter and thicker fish; it is 4·75 inches in length, the head being 1·75 inch, or more than one third the entire length of the fish. The depth of the body at the dorsal fin is 1·7 inch. The specimen now before me is 7 inches in length from the snout to the termination of the tail; of this length the head occupies 1·5 inch, and the depth of the body at the dorsal fin is 1·5 inch. In proportion to the size of the whole fish the head is much smaller than in any of the species before mentioned, and the form of the body is slender and graceful as compared with either *P. bollensis*, Ag., or *P. curtus*, Eg. The anterior portion of the dorsal outline of the specimen is slightly broken, the ventral and caudal margins are intact, and the lateral surface of the body and head is beautifully preserved.

The head is small, more or less triangular, with a bluntly-rounded snout; the posterior outline of the operculum is

* 'Poissons Fossiles,' vol. ii. part 2, p. 108, pl. lix. *b*, figs. 1-3 (1833-43).
† 'Memoirs of the Geological Survey,' dec. vi. pl. vii.
‡ *Ibid.* dec. viii. pl. viii. (1853).

convex; the mouth is large, apparently extending far towards the anterior extremity of the operculum; the snout projects a short distance beyond the mouth; the orbit is well developed, occupying an area one fifth the length of the head and about its own diameter distant from the end of the snout. The bones of the head are well preserved, and are ornamented with the enamelled ridges characteristic of the genus. The operculum—unlike that of *P. bollensis*, which is smooth, or *P. curtus*, which is anteriorly ornamented by widely separated ridges, whilst on the posterior portion they are nearly obsolete—in this specimen is deeply channelled, the shining ridges standing in high relief over the whole surface, but without any apparently definite arrangement. Along the inner or basal margin of the operculum there is a narrow strip, separated by a deep groove, which is perfectly smooth. The subopercular is comparatively small; it is similarly decorated and possesses a smooth strip along the margin next the operculum. The bones of the cranium, as well as those of the jaws, are ornamented with a series of more or less parallel ridges, which anteriorly bend with a sinuous curvature so as to encircle the nasal extremity.

The *scales* on the body are larger anteriorly than those nearer the tail; they are arranged in symmetrical parallel rows, each about ·1 inch in length and extending more or less diagonally from the dorsal towards the ventral surface. The scales of the dorsal part of the body are wider than those of the ventral. The enlarged figure (Pl. X. fig. 1 *a*) represents a scale midway across the body and ·5 inch behind the operculum; fig. 1 *c* is taken from the ventral surface at ·5 inch behind the pectoral fin, and 1 *b* is from the surface near the tail. The posterior margin of all the scales is deeply serrated; the number of serrations varies with the width of the scales, and corresponding to them are depressions of the surface or grooves, deepest at the anterior margin and extending towards, but rarely attaining, the posterior one. The base of each scale has a number of transverse imbrications, delicately marked and only distinguishable when highly magnified.

The *dorsal fin* is indicated by a faint impression of some of the fin-rays. It appears to be situated slightly in advance of the ventral fins, but not so much so as in *Ptycholepis curtus*, Egert. The *pectoral fins* are situated immediately behind the head; they are well developed, nearly an inch in length, consisting of about twenty rays. The rays are grooved near the base, but afterwards dichotomizing towards the margin; the transverse articulations are clearly discernible at about half an inch from the base of the fin, and may be distinguished

to the outer extremity of the rays. A series of minute fulcral scales extends along the margin of the anterior ray of the fin. The *ventral fin* is smaller than the pectoral and is equidistant between the pectoral fin and the tail; in this specimen the fin may not be quite perfect; it is ·7 inch in length. The basal part of the rays is grooved longitudinally, as in the pectoral fin, and their extremities are divided into two or more parts. The *anal fin* is not well defined. The *tail* is supported by a base ·7 inch across; it is forked, the distal extremities of the two lobes being 2 inches apart. The base of each lobe is somewhat hidden by a covering of iron pyrites; the extremities are composed of fine rays divided and subdivided from those nearer the base; each is composed of numerous small joints attached by transverse articulations. A number of triangular scales thickly coated with black enamel encircle the dorsal aspect of the base of the tail and extend along the margin of the upper lobe of the tail in an oblique imbricating series, decreasing in size as they approach the extremity. The lower lobe is devoid of fulcra. The vertebral column is extended towards or partially into the upper lobe of the tail. The lower lobe, though the rays are finer, is considerably larger than the upper one.

This species is characterized by its slim and graceful form and the small size of the head in proportion to that of the body. It may also be distinguished by the ornamentation of the head-plates and scales, the difference between the latter and the corresponding scales of the species described by Prof. Agassiz and Sir Philip Egerton being sufficiently characteristic. Sir Philip Egerton, in a supplement to the eighth decade of the 'Memoirs of the Geological Survey,' gives some details of a second specimen of *Ptycholepis curtus* found at Lyme Regis; the length of the fish is $5\frac{1}{2}$ inches and that of the head two inches, showing a similar disproportion as compared with the example now described. The ventral fins are placed nearer to the pectoral than the anal fins in *P. curtus*; whereas in this species the anal fin cannot be more than half as far from the ventral as the latter from the pectoral.

I propose to designate this species *Ptycholepis gracilis*.

Locality. Lias, Lyme Regis.

EXPLANATION OF PLATE X.

Fig. 1. *Ptycholepis gracilis*, Davis. Natural size.

Fig. 1 *a*. Scale midway across the body, about half an inch behind the operculum. ×15.

Fig. 1 *b*. Scale near the caudal extremity. ×15.

Fig. 1 *c*. Scale from the ventral surface. ×15.